TCP/IP Stack Performance Evaluation over HP Network using OPNET

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Abstract

TCP encounters performance degradation during the test performed over High Performance Netowrks (HPN) even though there is no measured loss on the Network. It has been observed that most of the performance issues are due to improper tuning of TCP/IP stack and the influence of queues in the network stack. This paper is aimed at measurement and performance issues of TCP/IP stack in the High Performance Network (HPN). The focus of this paper is to compare and contrast the OPNET TCP/IP stack implementation and its performance to the real time scenario. Also extending the same to describe the pros and cons of using OPNET simulation to evaluate the TCP based applications to the real time scenario. This paper gives the requirements for modeling and simulation to evaluate and measure the performance of TCP over HPN. Measurement results for a specific FTP application will be included. This will give the insight of factors to be considered and usefulness of tuning the TCP stack to improve the performance while designing the network using simulation tool like OPNET.